of stereoscopic vision, mosaics, types of camera, emulsions and stereoscopes, interpretation and identification of cultural and physical features on areal photography and photo interpretation of land use and settlement in the field surveying. Remote sensing and computer application in mapping, digital mapping, Knowledge and use of Geographic Information System (GIS), and thematic maps.

Use of field survey instruments: Use and application of Plane Table Survey – radiation, intersection, re-sectioning – two and three point problems;

Practical contouring by clinometers / abney level.

Leveling : Terms, types and principles of leveling, classification of leveling,

Dumpy level: use of Dumpy Level, preparation of field book, practical contouring, profiles, cross uniting.

Theodolite: Its parts and their functions, use of theodolite- traverse computation, independent co-ordinates,

Survey Camp: a topographical survey of a settlement will be done by organizing a camp at least for a week duration and maps and reports of the camp will be prepared. The students are supposed to stay in the camp, and the report shall be prepared separately and independently.

Books recommended:

1. Breed, C B and Homme,r G L : The Principles of Surveying, Vol. I & II, New York.
2. Davis, R E & Foot, F S : Surveying Theory and Practice, John Willey & Sons, New York
3. Deshpande, T S : A Text Book of Surveying and Leveling, United Book Corporation, Puna
4. Gautam N.C : Urban Land use Studies through Air Photo Interpretation Techniques, Pink Publishing House, Mathura.
5. Kanetkar, T P & Kulkarni, S V : Surveying and Levelling, A.V. Garia Prakashan, Puna.
6. Punamia, B. C. : Surveying and Field Work, Vol. I, Standard Book Depot, Delhi.
7. Roorkee Engineering College, Manual of surveying.
8. Sharma, J L : A Text Book of surveying, CBS Publishers, Delhi, 1988.
9. Singh, R L & Dutt P K : Elements of Practical Geography, Student Friends, Allahbad.
10. Tracy, T R : Surveying – Theory and Practice, McGraw Hill Book Co. New York.
11. Williams: Surveying and Field Work, Constable.l

M.G.S. UNIVERSITY, BIKANER

SYLLABUS

SCHEME OF EXAMINATION AND COURSES OF STUDY

FACULTY OF ARTS AND SOCIAL SCIENCE

M.A./M.Sc. GEOGRAPHY

M.A./M.Sc. PREVIOUS EXAMINATION - 2020
M.A./M.Sc. FINAL EXAMINATION - 2021

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Maharaja Ganga Singh University, Bikaner

8. Luder, D : Areal Photography Interpretation, Principles and Application, McGraw Hill, New York, 1959
9. Mark, S. Monmonier : Computer Assisted Cartography, Prentice Hall, Englewood Cliff, New Jersey, 1982.
10. Pratt, W K : Digital Image Processing, Wiley New Yoer, 1978.
11. Rao, D P (ed.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hyderabad, 1998.
12. Singh, S: Remote Sensing Technology, S A Publication, Jodhpur,
13. Star, J & Estes J : Geographic Information System, , An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.
14. Thomas M. Lillesand & Ralf W Kefer : Remote Sensing and Image Interpretation, John Wille & Sons, New York, 1994.
15 Wolf, Paul, K: Elements of Photogrammetry, McGraw Hill Book Co.

Dissertation/case study on Geographic Problem (in lieu of paper VI, VII, or VIII)

N.B. The candidate offering this paper will be required to submit dissertation/case study at least three week before the commencement of the theory examination. It will be examined by a board of two examiners. Three copies of the dissertation must be submitted to the university out of which one copy will be returned to the department/ college and one to he supervisor. The dissertation should be exclusively based on field work and statistical analysis as far as possible, and be prepared under the guidance of a post graduate teacher of five years standing. The volume of dissertation should not exceed 100 pages.

PRACTICAL

Surveying and laboratory work 1 hours per batch of 15 candidates spread over two days). The distribution of marks in the practical will be as follows:

1.	Laboratory work of four hours duration	40 marks
2.	Record work & viva-voce (15+5)	20 marks
3.	Field surveying & viva-voce (10+5)	15 marks
4.	Survey camp & viva- voce (15+10)	25 marks
	Total Marks	**100 marks**

Note : 12 hours of teaching practical be provided per batch of 15 students per week.

The art of surveying, History of surveying, scope, utility and problems, classification of surveying, Methods and techniques of representation of relief :

(a) Methods and techniques of depicting relief
(b) Profile, gradients and calculation of slopes
(c) Contour and inter-visibility
(d) Block diagrams, field sketching, serial profile, hypsometric curves, altimetric frequency graphs.

Interpretation of Topographical Maps : A brief history of topographical maps of the world with special reference to India and their interpretation and Detailed study of such top sheets.

Air photo interpretation and exercise on the determination of height of plan, parallax, number of runs and number of photographs, knowledge

UNIT-I

Remote Sensing: definition, scope and relevance for Geography
Basic concepts: principles of electromagnetic radiation, radiation interaction with atmosphere and earth surface features
Spectral signatures: vegetated surface, water bodies, bare surface
Properties of remote sensing sensors: LANDSAT, LISS, CARTOSAT, ASTER, SPOT, MODIS, NOAA-AVHRR

UNIT – II

Air photos: aerial cameras, scale and ground coverage, resolution, radiometric characteristics, films, filters
Fundamentals of photogrammetry: elements of vertical photographs, relief displacement, image parallax, stereoscope, orthophotos

UNIT – III

Digital Image processing: rectification, geo-referencing, re-sampling, atmospheric correction, contrast manipulation, stretching, image enhancement
Elements of visual interpretation: shape, size, pattern, tone, texture, shadows, association
Image classification: Unsupervised classification, supervised classification, Post classification accuracy assessment.

UNIT – IV

Basics of Geography Information System: its definition and scope and relevance for Geography
Raster data model, Vector Data Model, Attribute Data
Spatial Analysis: Overlying map layers, Spatial Querying, Neighboorhood analysis, Zonal analysis.
Digital Elevation model

UNIT – V

Applications of remote sensing in land use and land cover mapping, flood hazard analysis, drought assessment, water resources mapping, forest mapping, change detection,
Application of GIS as Decision support system: Urban management, land information system, Infrastructure management, Hazard and risk analysis and emergency response system.

Books recommended:

1. American Society of Photogrammetry: Manual of Remote Sensing, ASP, Falls Church, VA, 1983, Volumes.I, II.
2. Barrett, E C & L E Curts: Fundamentals of Remote Sensing and Air Photo Interpretation, McMillan, New York, 1992.
3. Burrough, P A : Principles of Geographic System for Land Resource Assessment, Oxford University Press, New York, 1986.
4. Compbell, J : Introduction to Remote Sensing, Guilford, New York, 1989.
5. Curran, Paul, J. : Principles of Remote Sensing, Longman, London, 1985.
6. Gautam, N C : SPGU Technology of Geography, , N R S A Hyderabad
7. Hord, R M : Digital Image Processing of Recently Sensed Data, Academic, New York, 1989.

SCHEME OF EXAMINATION

M.A. / M. Sc. Previous & Final

Each Theory Paper	3 hours duration	100 Marks
Dissertation / Thesis / Survey Report, if any		100 Marks

1. The number of paper and the maximum marks of each paper practical shall be shown in the syllabus for the subject concerned. It will be necessary for a candidate to pass in theory part as well as in practical part (wherever prescribed) of a subject/ paper separately.
2. A candidate for a pass at each of the Previous and the Final Examination shall be required to obtain (i) at least 36% marks in aggregate of all the papers prescribed of the examination and (ii) at least 36% marks in practical(s) wherever prescribed the examination, provided that if a candidate fails to secure at least 25% marks in each individual paper at the examination also in the test/ dissertation/ survey report/ field work, wherever prescribes, shall be deemed to have failed at the examination not with standing his having obtained the minimum percentage of marks required in the aggregate for the examination. No division will be awarded at the previous examination. Division shall be awarded at the end of the Final Examination on the combined marks obtained at the and the Final Examination taken together, as noted below:

First Division 60% of the aggregate marks taken together of the previous & final examination.

Second Division 48% of the aggregate marks taken together of previous & final examination.

3. If a candidate clears any paper(s) Practical(s)/ Dissertation prescribed at the previous and /or final examination after a continuous period of three years, then for the purpose of working out his division the minimum pass marks only viz. 25% (36% in the case of practical) shall be taken into account in respect of such paper(s) Practical(s) Dissertation are cleared after the expiry of the aforesaid period of three years, provided that in case where a candidate requires more than 25% marks in order to reach the minimum aggregate as many marks out of those actually secured by him will be taken into account as would enable him to make the deficiency in the requisite minimum aggregate.
4. The Thesis/ Dissertation/ Survey Report/ Field work shall be typed written and submitted in triplicate so as to reach the office of the Registrar at least 3 weeks before the commencement of the theory examinations. Only such candidates shall be permitted to offer the Thesis/ Dissertation/ Survey Report/ Field work (if provided in the scheme of the examination) in lieu of a paper as have secured at least 55% marks in the case of annual scheme ans I & II semester examination taken together in case of semester scheme irrespective of the no. of papers in which a candidate actually appeared at the examination.

N.B. (i) Non- collegiate candidates are not eligible to offer dissertation as per Provisions of 170-A.

M.A./ M. Sc. Geography

There will be theory papers and a practical each in previous and final examination. Each of the theory papers is of three hours duration. Candidates will be required to pass of both in theory and practical separately.

The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

M.A./ M. Sc. PREVIOUS GEOGRAPHY EXAMINATION 2020

Paper I : Evolution of Geographical Thought
Paper II : Structural & Dynamic geomorphology
Paper III : Principles & Theory of Economic Geography
Paper IV : Geography of Environment

Note: A weekly seminar be arranged for M.A./ M. Sc. Previous and Final students.

1. Laboratory & map work test (4 hours duration) 40 marks
2. Record work and Viva-voce (25 +10) 35 marks
3. Project report & viva-voce (15+10) 25 marks

Total Marks 100 marks

Practical : Surveying and Laboratory Work

M.A./ M.Sc. FINAL GEOGRAPHY EXAMINATION 2021

Paper V : Advanced Geography of India
PaperVi : Any one of the following:
(a) Urban Geography
(b) Regional Planning & Development
(c) Cultural Geography
(d) Geography of Tourism
Paper VII : Any one of the following:
(a) Bio- geography
(b) Agriculture Geography
(c) Quantitative techniques in Geography
(d) Geography of Population & Settlement
Paper VIII : Any one of the following:
(a) Political Geograpgy
(b) Industrial Geography
(c) Climatology & Oceanography
(d) Remote sensing & G.I.S.
Dissertation : In lieu of Vi/ Vii/ Viii paper

Note: Each theory paper must be allotted minimum six hours per week for teaching.

Practical : Surveying and Laboratory Work

and deep- ocean basins, Bottom relief of Indian, Atlantic and Pacific oceans; Marine sediments, physical and chemical properties of sea water.

UNIT – V

Interlink between atmospheric circulation and circulation patterns in the oceans; Surface currents- thermohaline, waves and tides; Impact of humans on the marine environment; Law of sea, Exclusive economic zone, marine deposits and formation of coral reefs.

Books recommended:

1. Barry, R G & Chorley, P J : Atmosphere, Weather and Climate, Rutledge, London & New York, 1998.
2. Critchfield, J H : General Climatology, Prentice Hall, New Delhi, 1993.
3. Das, P K : Monsoons, National Book Trust, New Delhi, 1987
4. Davis Richard, J A : Oceanography- An Introduction to Marine environments, Wm. C. Brown Lowa , 1986.
5. Fein, J S & Stephens P N : Monsoons, Wiley Interscince , 1987.
6. Garrison, T : Oceanography- An Introduction to Marine Science, Books Cole, Pacific Grove, USA, 2001.
7. Indian Met. Dept. : Climatological Tables of Observations in India, Govt. of India, 1968.
8. Lal, D S : Climatology, Chaitanya, Allahabad, 1986
9. Lydolph P E : The Climate of the Earth, Rowman, 1985
10. Menon, P A: Our Weather, N.B.T. New Delhi, 1989
11. Peterson, S : Introduction to Meteorology, McGraw Hill, London, 1969
12. Robinson P J & Henderson S : Contemporary Climatology, Henlow, 1999
13. Savinder Singh: Climatology, Prayag Pustak Bhavan, Allahbad, 2005.
14. Savinder Singh: Oceanography, Prayag Pustak Bhavan, Allahbad, 2008.
15. Sharma, R C : The Oceans, Rajesh , New Delhi. 1985.
16. Thompson R D & Perry A (ed.) : Applied Climatology, Principles and Practice, Rutledge, London, 1997.
17. Trewartha, G T : An Introduction to Climate, McGraw, 1968.
18. Lal, D S : Jalvayu Evm Samudra Vigyan, Sharda, Allahbad, 2001.
19. Mamoria & Sisodia: Jalvayu Vigyan Evm Samudra Vigyan, Sahitya Bhavan, Agra, 2005.

PAPER VIII (d): REMOTE SENSING AND G.I.S.

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

3. Choudhary, M R : Industrial Geography of India.
4. Estall, R C & Buchanan, R O : Industrial Activity and Economic Geography, Hutchinson & Co. London.
5. Hartshorne, T A & Alexander, J W : Economic Geography, Prentice Hall, New Delhi, 2000.
6. Hoover, E M : The Location of Economic Activity, McGraw Hill, New York.
7. Isard, W : Methods of Regional Analysis, The Techno. Press of MIT & John Willey, New York, 1956.
8. Lloyed, Peter E & Dicken, P: Location in Space: A Theoretical Approach to Economic Geography, Harper & Row, New York, 1972.
9. Miller, E : A Geography of Manufacturing, Prentice Hall, Englewood Cliffs, New Jersey, 1962.
10. Riley, R.C. Industrial Geography, Chatto and Windus, London, 1973.

PAPER VIII (C): CLIMATOLOGY AND OCEANOGRAPHY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Nature and scope of climatology and its relationship with meteorology; Composition, mass and structure of atmosphere; Insolation, heat balance of the earth, Green house effect; Vertical and horizontal distribution of temperature; Atmospheric moisture: humidity, evaporation, condensation, precipitation- formation types, acid rain, World pattern of precipitation.

UNIT - II

Atmospheric motion, forces controlling motion of air, vertical motion and velocity, local winds, jet stream, general circulation in atmosphere, Tropical, Temperate and High Latitude weather systems- concept of air masses and atmospheric disturbances. Ocean atmospheric interaction- El Nino, Southern oscillation ENSO and La Nino, Monsoon winds, norwesters and cyclones- tropical and temperate. Climate of India and its controls: western disturbances.

UNIT – III

Climate classification of Koeppen and Thornthwaite; Major climates of the world- Tropical, Temperate, Desert, and Mountain climate; Climate changes- evidences, possible causes, global warming, environmental impact and society's response.

UNIT – IV

Nature and scope of oceanography- history of oceanography, distribution of land and water, major features of ocean basins, continental margins

The distribution of marks in the practical will be as follows:

1. Laboratory work of four hours duration	40 marks
2. Record work & viva-voce (15+5)	20 marks
3. Field surveying & viva-voce (10+5)	15 marks
4. Survey camp & viva- voce (15+10)	25 marks
Total Marks	**100 marks**

N.B. 12 hours of teaching practical be provided per batch of 15 students per week.

Instruction for Geography Practical Examination:

1. The record work should have 50 sheets (1/4th of 20"x30") and they should cover the total syllabus proportionately. The teacher should give fresh exercises every time so that the students may not undertake tracing of old exercises. The work must be done in the class room and signed on the same date. This would discourage completing the whole work at the nick of the examination. Emphasis should be laid on ink work.
2. Viva-voce examination be held to judge the real knowledge of the student and to examine the authenticity of the record work, the marking on record work and its viva-voce be based on the original work of the candidate and not merely producing the record work get done by any other agency. Marks be deducted for the part of the syllabus not covered.
3. On an average about 20 students be examined in one day in M.A./ M.Sc. Previous and Final. As far as possible one practical exercise to be set to judge the practical skill.
4. The external examiners, be provided syllabus and detailed instruction at the time of obtaining his consent. For M.A./ M.Sc. Final a minimum of 2 days be fixed to conduct the examination.

Note: A copy of the instructions be sent to the examiners for their information.

M.A./ M.Sc. PREVIOUS GEOGRAPHY EXAMINATION- 2020

PAPER-I: EVOLUTION OF GEOGRAPHICAL THOUGHT

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Definition of geography, The nature and scope of geography (basic concepts), Post war trends, Inter-disciplinary trends, recent trends in geography.

UNIT-II

Pre-scientific geographic ideas in ancient and medieval times: Indian influences. Geography of Vedic age and geography of Puranas: sources of puranic geography, Puranic continents and oceans, the mountain

system and river systems (first 4 chapters from Geography of Puranas by S.M. Ali). Development of geography in India.

UNIT-III

Contribution by Greek, Roman and Arab geographers; the emergence of scientific geography in the 18th and 19th centuries; its place among other social sciences; Foundation of modern geography; Contribution of German, French, British and American schools; Humboldt and Ritter; Leaders of the first generation- Ratzel, Richthophan, Hettener; Contribution of Vidal-de-la Blache and Jean Brunche.

UNIT-IV

Conceptual and methodological developments during the 20th century; Paradigm shifts; Man & environment; Areal differentiation and spatial organization; Dichotomies in geography- Physical & human geography, Determinism & possibilism, Neo-determinism, Regional & systematic geography, Qualitative & quantitative geography, Theoretical & applied geography, Analytical & synthetical geography, Reductionism & holism.

UNIT-V

Impact of positivism, humanism, radicalism, and behaviouralism in geography; Positivism, functionalism, idealism, realism, and post modernism in geography. Feministic perspective in geography.

Books recommended:

1. Adhikari S.: Fundamentals of Geographical Thoughts, Chetanya Pub. House, Allahabad, 1992.
2. Ali, S.M.: The Geography of Puranas, Peoples Pub. House, Delhi, 1966.
3. Dickinson, RE: The makers of Modern Geography, Roultedge & Kegan Paul, London, 1969.
4. Dikshit RD: Geographical Thought- A Contextual History of ideas, Prentice Hall of India Pvt. Ltd.
5. G. Taylor (ed.) : Geography of Twentieth Century, Methuen, London.
6. Hagget, P: Geography- A Modern synthesis, Harper & Row, New York, 2001.
7. Jenson AH: Geography- History & Concepts, 1988.
8. Hartshorne, Richard: Perspective on the Nature of Geography, Rand Mc Nally & Co. Chigo,1959.
9. Harvey ME and Holly: Themes in Geographic Thought, Rawat, Jaipur.
10. Johnston, RJ: The Future of Geography, Methuen, London, 1988.
11. Minshull Roger: The Changing Natur of Geography, Hutchinson Univ. Lib. London, 1970.
12 Wooldridge & East: The Sprit and Purpose of Geography, Hutchinson Univ. Lib. London, 1951.
13. Kaushik, S D : Bhogolik Vichardhara evm Vidhitantra.
14. Jain, S M : Bhogolik Chintan va vidhitantra, Sahitya Bhavan, Agra
15. Jat, B.C: Bhogolik Chintan ka Itihas, Malik, Jaipur, 2010.

PAPER-II: STRUCTURAL AND DYNAMIC GEOMORPHOLOGY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed

PAPER VIII (b): INDUSTRIAL GEOGRAPHY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Nature and scope of Industrial Geography, Location factor in manufacturing, centralization and decentralization of industrial enterprises; Horizontal, vertical and diagonal linkages of modern industries, Methods of measuring the spatial distribution of manufacturing industries; Location, quotient, coefficient of geographic association, Index of concentration.

UNIT – II

Theories and models of industrial location: The least coast school, The transport coast school, the market area school, the marginal location school, the behavioural school, Modern refinements to least coast theory, New trends in industrial geography.

UNIT – III

Important industrial regions of the world: selecting one each of USA, Russia, Japan, Britain and West Europe. Important industrial regions of India; The changing character of geographical concentration and impact of technological change; Case study of the following regions:

(i) The Hooghly side industrial region.
(ii) The Damoder valley industrial region.
(iii) The Ruhr basin industrial region.
(iv) The Great Lakes industrial region.
(v) Industrial centres of Rajasthan: Bhiwadi, Bhilwara, Jaipur and Luni Basin.

UNIT – IV

Influence of power and geographical inertia in manufacturing industries : The textile industry, Multi-location industries: Iron & steel, Aluminium, Oil refining; Footloose Industries: Automobile, Commercial ship building; Raw material oriented industries- Copper, pulp & paper, cement.

UNIT – V

Environmental degradation caused by manufacturing industries, Industrial hazards and occupational health; Impact of manufacturing industries on economic development; Role of globalization on manufacturing sector; Shifting of industries and its impact on urban fringe.

Books recommended:

1. Alexanderson, C: Geography of Manufacturing, Prentice Hall Bombay, 1967.
2. Chauhan, M L & Khandelwal, M K : Dyeing, Printing and Textile, Ritu Publication, Jaipur, 2005.

(c) The heart of the state, Core Areas; (d) The Focus: Capital City; (e) Unitary and Federal states; (f) The dying colonialism and resurgent nationalism.

UNIT- III

Frontiers and Boundaries: Concepts and Classification:
(a) Frontiers, boundaries and buffer zones; (b) Classification of boundaries- changing concept; (c) The concept of territorial sea and maritime boundaries; (d) Land locked states, Problems of access.

UNIT – IV

Strategy- International Politics:
(a) Study of federation of independent states and USA as powers; (b) Emergence of Third World Block; (c) politico- geographical study of India, geopolitical significance of Indian Ocean and SAARC region.

UNIT – V

Extending Dimensions of Political Geography:
(a) The politics and transportation; (b) The geography of foreign aid and economic development; (c) The politico- geographical implications of space research; (d) Supra-nationalism: from states to blocks.

Books recommended:

1. Alexander, I.M. : World Political Patterns, John Murray & Co. London, 1966.
2. Bowman, I : The New World Problems in Political Geography, World Book Co. New York.
3. De Blij H J & Glassner, Martin : Systematic Political Geography, John Willey, New York, 1968.
4. Deshpande C D : India – A Regional Interpretation, Northern Book Centre, New Delhi, 1992.
5. Dikshit, R D : Political Geography- A Contemporary Perspective, Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1982.
6. East, W G & Spate O H K : The Changing Map of Asia, Methuen, London, 1966.
7. Hartshorne, R : The Functional Approach in Political geography, A,A,A,G. Vol. 40, 1950.
8. Moodie, A.E. : Geography behind Politics, Hutchinson University Library, London
9. Pounds, N J G : Political Geography, McGraw Hill, New York, 1972.
10. Prescott, J R V : The Geography of Frontiers and Boundaries, Aldine, Chicago.
11. Spykman, N J : The Geography of Peace, Harcourt Brace, New York, 1944.
12. Sudipta Adhikari: Political Geography, Rawat, Jaipur & Delhi, 1997.
13. Sukhwal, B L : India – A Political Geography, Allied Publishers, New Delhi
14. Taylor, Peter: Political Geography, Longman, London, 1985.
15. Valkenburg, S V & Stoz, C L : Elements of Political Geography, 2nd ed. Prentice Hall of India, New Delhi, 1963.
16. Weigert, W H : Principles of Political Geography, Appleton Century Croyts, Inc. New York, 1957.
17. Bhattacharya and Achha : Rajneetik Bhoogol

50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Nature and scope of geomorphology, Fundamental concepts, the constitution of earth's interior: the evidences of seismology, thermal state of the earth interior, the zoning of the earth's interior. The principles of isostasy: origin of the concept, level of compensation, different scientists views, gravity anomaly. Revival of continental drift theory of Alfred Wegner, Plate tectonics, Seafloor spreading hypothesis.

UNIT-II

Earth Movements and geological structure, Endogenetic forces: diastrophic and sudden forces, Tectonic regionalization of India, Geosynclines, Ancient shields, Median mass, Theories of mountain building of Jeffery, Kober, Joly, Daly, Holms, phases of mountain building with reference to evolution of the Himalayas.

UNIT-III

Exogenetic processes: Concept of gradation, agents and processes of gradation; Causes, types and classification of weathering, Mass movement, Erosional and depositional processes; Sub- areal denudation, concept of landscape evolution, factors controlling landform development, landform classification, Karst, Arid, Semi-arid, Glacial and coastal landforms.

UNIT-IV

Fluvial process, mathematical form of river curve, the fundamental principles of cycle of erosion and its presentation, drainage patterns, Indian river systems and river regimes; the study of slopes, concept of slope in geomorphology, old and new ideas on evolution of hill side slope elements (hilltop, hillside, screed slope, and pediment), Detailed study of the ideas of W.M.Davis, Walter Penck, Wood, A.Young, L.C. King, and Strahler on the development of slope.

UNIT-V

The study of erosional surfaces: concept of erosion surface, techniques of recognition and correlation of erosion surfaces wit special reference to India and Rajasthan; Concept of applied geomorphology, bottom relief of the oceans, Coral reefs and islands, Sea level change and coastal erosion, formation of coasts of India.

Books recommended:

1. Ahmed E: Coastal Geomorphology of India, New Delhi.
2. Cotton CA: Geomorphology, John Willey & Sons, New York.
3. Dayal P: A Text Book of Geomorphology, Shukla Book Depot, Patna, 1996.
4. Holms A: Principles of Physical Geology, Nelson, 1978.
5. Jefferys H: The Earth- its origin, history and physical constitution.
6. King and Embleton : Glacial and Pre-glacial geomorphology, Edward Arnold, Londo, 1975.

7. Lobeck,AK: Geomorphology, McGraw Hill Book Co. NewYork, 1939.
8. Monkhouse,F.J.: Principles of Physical Geography, Hodder & Strougten, London, 1960.
9. Pitty, AF: Introduction to Geomorphology, Methuen, Londen, 1974.
10. Sharma, HS (ed.): Perspective in Geomorphology, Concept, New Delhi, 1980.
11. Sharma, RC & Vatal,M: Oceanography for Geographers, Chattanya, Allahbad,1992.
12. Singh,S: Geomorphology, Prayag, Allahbad,1998.
13. Steers, JA: The Unstable Earth, Kalyani, New Delhi, 1988.
14. Strahler AN: Earth Sciences, Harper & Row, NewYork.
15. Strahler, AN & Strahler, AH: Modern Physical Geography, John Willey, NewYork, Revised 1992.
16. Thornbury, WD: Principles of Geomorphology, John Willey, NewYork, 1960.
17. Wooldridge, SW & Morgan, RS: An Outline to Geomorphology, Longman, London, 1960.
18. Young, A; Slopes, Oliver & Boyd, Edinburgh, 1972.
19. Sawinder Singh, Bhoo Akriti Vigyan, Vasundhra, Gorakhpur
20. Kaushik, SD: Bhoo Akriti Vigyan, Rastogi, Meerut
21. Negi, VS: Bhoo Akriti Vigyan, Rastogi, Meerut
22. Jat, BC: Bhoo Akriti Vigyan, Rawat, Jaipur.

PAPER- III: PRINCIPLES & THEORY OF ECONOMIC GEOGRAPHY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Meaning, nature, scope and methods of economic geography; relation of economic geography with economics and other branches of social sciences, concept of economy; simple model of economy: environmental relations of economy, spatial structure of economy.

UNIT-II

Types of agriculture: Whittlesey's classification of agricultural regions and special study of subsistence agriculture, tropical plantation, Mediterranean agriculture, mixed faming, stock raising and its products; concept and techniques of delimitation of agriculture regions; crop combination and diversification; Von Thuenen's model of agriculture location and its modification.

UNIT-III

Spatial distribution of energy; sources of power: coal, petroleum, hydroelectricity, and atomic power; Future need of energy, Nature of

4. Michael Chisholm : rural Settlements and Landuse Transaction Publishers, 1972.
5. Clark, John I : Population Geography, Pergamon Press, Oxford, 1973.
6. Garnier, B J : Geography of Population, Longman, London, 1970.
7. Hudson, E S : Geography of Settlement, Darby's Edition of Brook's Universal Bazatteer.
8. Jones: A Population Geography, Guilford Publication, 1990
9. Mamoria C B : India's Population Problem, Kitab Mahal, New Delhi, 1981.
10. Mitra Ashok: Indi's Population: Aspects of Quality and Control, Vol. I & II, Abhinav, New Delhi, 1978.
11. Sharma, R C : settlement Geography of Indian Desert, Kumar Brothers, New Delhi, 1972.
12. Singh, R L : Meaning, Objective, Scope of Settlement Geography, B.H.U.
13. Smailes, A E : The Geography of Towns, Hutchinson University Library, London, 1953.
14. Srinivasan, K : Basic Demographic Techniques and Applications, Sage, N. Delhi, 1998.
15. Sundram, K V and Sudesh Nangia (ed.): Population Geography, Heritage , Delhi, 1986.
16. Woods, R : Population Analysis in Geography, Longman, London, 1979.
17. Zelinsky, W: A Prologue to Population Geography, Prentice Hall, 1966.
18. Verma: Adhivas Bhoogol, Rajasthan Hindi Granth Academy, Jaipur.

PAPER-VIII: ANY ONE OF THE FOLLOWING:

PAPER VIII (a): POLITICAL GEOGRAPHY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT- I

Definition, scope and Development of Political Geography:
(a) Definition and scope of Political Geography and its relation with other social sciences; (b) geopolitics and German school of thought; (c) development of Political Geography- Concepts of Mackinder, Spykman, Meining, Hooson, De Sseversky, World's geostrategic regions.

UNIT - II

States and Nations:
(a)The Functional Approach in Political Geography by Hartshorne; (b) The elements of state- territory, Population, Organization and Power;

4. John Silk: Statistical Concepts in Geography, George Allen & Unwin, London.
5. Johnston, R J: Multivariate Statistical Analysis in Geography, Longman, London,1973.
6. King, T J: Statistical Analysis in Geography, Prentice Hall.
7. Mahmood A: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi, 1977.
8. Saroj K Pal: Statistics for Geosciences- Techniques and Applications, Concept, New Delhi, 1998.

PAPER VII (d.): GEOGRAPHY OF POPULATION AND SETTLEMENT

Time : 3 hours duration **Max. Marks: 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Definition and scope of population geography, Theories in Population Geography- Malthusian, Neo- Malthusian, and Optimum Population Theory, Demographic Transition Theory.

UNIT – II

Population Census with special reference to Indian census; Growth, density and distribution of population in the world with special reference to India; age and sex composition; Economic and religious composition of population with special reference to India; Rural and urban population.

UNIT – III

Urbanisation, Internal and International migration, bejavioural migration studies, The population policy of Government of India.

UNIT – IV

Definition, scope and development of settlement geography, Theories in settlement geography, Causes of origin of settlements, types, site and situation of rural and urban settlements, settlement pattern, size and spacing of rural and urban settlements.

UNIT – V

Morphological characteristics of rural and urban settlements with special reference to India, Concentric zone and multiple nuclei models of urban growth; problems of urban housing and emergence of status.

Books recommended:

1. Bogue, D J : Principles in Demography, John Willey, New York, 1969.
2. Census of India: India- A State Profile, 1991.
3. Chandana, R C : Geography of Population, Concept, New Delhi, 2000.

world trade and its role in economic development; Decision making processes- a behavioural approach.

UNIT-IV

Classification of industries; resource based and footloose industries; theories of industrial location- Weber, Losch and Isard; Case studies of selected industries- iron & steel, cotton textile, chemical fertilizers, paper & pulp, oil refining and petrochemical.

UNIT –V

Location and interaction in a simplified economic landscape; Spatial variation in transport coast- accessibility & connectivity. Spatial variation in production coast. Demand scale and agglomeration, Concept of economic region, techniques of delimitation of economic regions, economic regionalization of India.

Books recommended:

1. Bengston, NA & Royen, MV: Fundamentals of Economic Geography, Prentice Hall, New York.
2. Berry & Ray: The Geography of Economic systems, Prentice Hall, New York.
3. Drez & Sen: India – Economic Development and Social Opportunity, Oxford, New Delhi, 1996.
4. Ghose, BC: Industrial Location
5. Guha & Chattergy: A New Approach to Economic Geography, World Press, Kolkatta
6. Hartshorne & Alexander: Economic Geography, Prentice Hall, New York, 2000.
7. Hodder & Lee: Economic Geography, St. Martin Press, New Yoek, 1974.
8. Isard, W: Methods of Regional Analysis, The Technology Press& John Willey, New York, 1956.
9. John & Darkenwald: Economic Geography, Mc Millan Co., New York, 1975.
10. Kaswan, N.R.: Energy Resources & Economic Development - A Study of Rajasthan, Concept Publishing Co.,New Delhi, 1992.
11. Leong & Morgan: Human & Economic Geography, Oxford University Press, London, 1982.
12. Lloyed & Dicken: Location in Space: A Theoretical Approach to Economic Geography, Harper & Row, New York, 1972.
13. Mc Catty, James & Lindberg: A Preface to Economic Geography, Englewood Cliffs , Prentice Hall, 1966.
14. Millar, E.: Geography of Manufacturing, Prentice Hall, New York, 1962.
15. Renner T.H. and others: World Economic Geography.
16. Robertson, H.: (ed.) : Globalization and Environment, E. Elgar Co. UK, 2001.
17. Robinson, H.: Economic Geography, M Sc Donald London
18. Smith, David M.: Industrial Location: An Economic Geographical Analysis, Lloyd Willey, New York, 1981.
19. Smith, J.C. & Phillip, M.O.: Industrial and Commercial Geography, Henry Hall.

20. Thoman, RS: The Geography of Economic Activity, McGraw Hill, New York, 1962.
21. Wheeler, J.O.: Economic Geography, John Willey, New York, 1995.
22. Zimmerman, E,W.: World Resources and Industries, Harper & Co. New York.
23. K.N. Singh & Jagdish Singh: Arthik Bhoogol ke Mool tatva, Vasundhara, Gorakhpur.
24. P. Jain: Arthik Bhoogol, rastogi, Meerut.
25. M. Haroon: arthik Bhoogol, Vasundhara, Gorakhpur.
26. Jat, B.C.: Arthik Bhoogol, Panchsheel, Jaipur.

PAPER -IV: GEOGRAPHY OF ENVIRONMENT

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Concept of environment, meaning, nature and scope of environmental geography; Concept of ecology and ecosystem: definition and elements, energy flow and productivity in ecosystem, eco-cycles, types of eco-system.

UNIT-II

Man- environment relationship, perception of environment and its quality, degradation of environment, development vis-à-vis eco-crises; Population, resources and eco-crises; environment and quality of life.

UNIT – III

Environmental hazards and pollution problem- water, air, noise, soil and radioactive: causes, impact and measures of control with Indian examples.

UNIT – IV

Environmental management- management of forest, soil, wild life, energy and mineral resources, Environmental education, monitoring and mapping, conservation of natural resources.

UNIT – V

Ecological planning for sustainable development in India, environmental polices and programmes (international and national) , environmental problems and planning in India.

Books recommended:

1. Batel, B.(ed): Management of Environment, Wiby eastern Ltd. New Delhi, 1980.
2. Brij Gopal: Elements of Ecology
3. Centre for Science & Environment: The State of India Environment: A citizen's Report, 1982, 1985, New Delhi.

13. Stamp, L D : The Land of Britain, its use and miss-use, Longman, London, 1962.
14. Symon Leslie : Agricultural Geography, Bell & Sons, London, 1967.
15. Pramila Kumar: Krishi Bhoogol, M P Hindi Academy.
16. Brij Bhushan Singh: Krishi Bhoogol, Gorakhpur.
17. B. L. Sharma: Krishi Bhoogol, Himanshu, Udaipur, 2003.
18. Saran. D C & Tomar, V K : Krishi Jalvayu Vigyan, Agra, 1985.

PAPER VII (C.): QUANTITATIVE TECHNIQUES IN GEOGRAPHY

Time : 3 hours duration **Max. Marks: 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Definition of statistics, Importance and use of statistical techniques in geography, Statistical data, Various types of averages, Measures of dispersion and their calculation, Normal frequency distribution, Curve and its uses, Binominal and poisons frequency distributions.

UNIT-II

Characteristics of samples, Methods of sampling, Statistical significance, Standard error of difference, Significance test in small samples, Student's't' test, Snedecor's variance ratio test (F test).

UNIT-III

Difference between large and small samples, Significance test in large samples, Standard error of the difference of sample means, Chi Square test- definition and nature, degree of freedom, goodness of fit.

UNIT-IV

Measures of spatial distribution, Point and line distribution, Nearest neighbour index, Models, Importance of models in geography, Models as quantitative techniques, Simulation models, Gravity models, Measures of inequality, Lorenge curve, Ginne's coefficient. Combinational analysis- Nelson's method, Weaver's method, Raffiullah's method, Ternary diagram.

UNIT- V

Product moment correlation coefficient, Spearman's correlation coefficient, Kendall's coefficient of correlation, Simple linear regression analysis, Regression line and confidence limits.

Books recommended:

1. Gregory S: Statistical methods and the geographer, Longman, London, 1978.
2. Growzon & Cowden: Applied General Statistics, Prentice Hall.
3. Hagget, P: Locational Analysis in Human Geographical Studies, Sanjay Enterprises, New Delhi.

ownership and size of holding; Economic input of human and animal power, irrigation, fertilizers, mechanization; financial management, market system, transport and trade etc.

UNIT – II

Water resource: quality of water for irrigation, quality criteria, methods of irrigation, soil and water balance, Types of agriculture, Whittlesey's classification of agricultural regions, Special study of- shifting cultivation, plantation agriculture, Mediterranean, collective and state farming, extensive and intensive agriculture, dry farming and their characteristics.

UNIT- III

Applied Agriculture Geography: land use, concept, history of land use, principles, objectives, policies and planning, land use surveys; Land classification- need and basis of classification- British, American, Indian, Irish patterns, Land use data- sources, types of mapping and problems.

UNIT – IV

Models in agricultural land use: concept, need and principles; Von Thuenen's Agricultural Location Theory and its recent modification; Coleman's model, Preparation and planning of a detailed proforma for land use survey.

UNIT - V

Measurement of levels of agricultural development: concept and methodology, agricultural regionalization, methods of delimitation; Crop ranking, crop combination regions, Detailed study of Kendal, Weaver, Doi and Raffiullah; Cropping intensity and crop divercification; agricultural efficiency, Nutrition and balance sheet, Crop land use and deficiency diseases.

Note: Candidates are expected to make field studies by organizing field trips for land use survey of a village. Question may be asked in examination based on such survey.

Books recommended:

1. Ali Mohammed : Dynamics of Agriculture Development in India , Concept, New Delhi.
2. Gregor, H P : Geography of Agriculture, Prentice Hall, New York, 1970.
3. Grigg, D B : The Agriculture System of the World, Cambridge University Press, New York, 1974.
4. Hartshorne, T A & Alexander, J W : Economic Geography, Prentice Hall, New Delhi, 2000.
5. I.C.A.R.: Soil and Water Conservation Research, (1956- 71).
6. I.C.A.R : Soil Conservation in India.
7. Kostrowicki, J : World Types of Agriculture, Polish Academy, Warsaw, 1976.
8. Morgan, W B & Nortan, R J C : Agriculture Geography, Mathuen, London, 1971.
9. Noor Mohammed: Agricultural Land use in India, Inter-India, Delhi.
10. Sachidanand: Social Dimensions of Agricultural Development, National Publishing House, Delhi.
11. Shafi, M : Land Utilization in Western UP, AMU Aligarh, 1960.
12. Singh & Dhillon : Agricultural Geography, Tata, McGraw Hill, New Delhi, 1988.

4. Desh Bandhu (ed.): Environmental Management, Indian Environment Society, New Delhi.
5. Gupta & Gurjar: sustainable Development, Rawat, Jaipur.
6. Kaswan, N.R. : Man and Environment (Hindi), Malik & Co. Jaipur, 1999.
7. Mathur, H.S.: Biogeography
8. Park, C.C: Ecology and Environmental Management, Butterworths, London, 1980.
9. P.D. Sharma: Ecology and Environment, Rastogi, Meerut, 2010.
10. Peter Cotgreave & Irwin Forseth: Introductory Ecology, Blackwell, 2002.
11. Savinder Singh: Geography of Environment, allahbad
12. Singh & Singh (ed.): Geography of Environment, Concept, New Delhi
13. Strahler, A.N.: Geography and Man's Environment, John Willey, New York, 1976.
14. V.K. Srivatava: Paryavaran Bhoogol evm Paristhitiki, Vasundhara, Gorakhpur.

PRACTICAL

Distribution of marks will be as follows:

1.	Laboratory & map work test (4 hours duration)	40 marks
2.	Record work and Viva-voce (25 +10)	35 marks
3.	Project report & viva-voce (15+10)	25 marks
	Total Marks	**100 marks**

N.B. 12 hours of teaching practical be provided per batch of 15 students per week.

Note: M.A Previous students will compulsorily undertake 1 week field survey at any location of geographical interest.

Laboratory and map work:

(i) The art and science of cartography, history of maps, materials, techniques and preparation of maps; Map as a tool in geographical studies; types of maps, techniques for the study of spatial pattern of distribution, single purpose and composite maps.

(ii) Enlargement, reduction and combination of maps, finding area of maps, use of planimeter.

(iii) Interpretation of weather maps and weather forecast.

(iv) Elementary trigonometry.

(v) Map projections- definition, choice & use, limitations and classification.

Construction (mathematical) and characteristics (properties) of following projections:

I. Conical projection:

1. Simple conical projection with one standard parallel
2. Simple conical projection with two standard parallel
3. Bonne's Conical Projection
4. Poly-conic projection
5. International

II. Cylindrical Projection:

1. Cylindrical Equal Area Projection

2. Natural Cylindrical Projection
3. Simple Cylindrical Projection
4. Mercator's Projection
5. Gall's stereographic Projection

III. Zenithal Projections:

1. Gnomonic (a) Polar case (b) Equatorial case.
2. Stereographic (a) Polar case (b) Equatorial
3. Orthographic (a) Polar case (b) equatorial case
4. Equal Area (a) Polar case (b) equatorial case
5. Equidistant (a) Polar case (b) equatorial case

IV. Conventional Projections:

1. Sinusoidal Projection
2. Mollweide Projection
3. Interrupted Mollweide Projection
4. Interrupted Sanson Flamsteed (Homolosine)

Geographical Maps and Diagrames:

Computation of data, preparation of frequency tables, representation of histogram and ogive; finding skewness, Computation of mean, median, mode, standard deviation and coefficient of variation and correlation; Theoretical basis of nearest neighbour analysis, Practical exercise of nearest neighbour analysis, Network analysis, Locational analysis of urban centres, All these be computed from statistical data preferably based on district or tehsil unit area and the following types of maps and diagrams be prepared:

Isopleths, Choropleth, Chorochromatic maps; Mapping of location specific data, accessibility and flow maps; Isochrones and population potential surface maps; population pyramid; Sten-de-Geer's and Stilgenbaur method.

Three dimensional diagram of economic and social data, Block pile, Sphere, Pyramid; Graphs- polygraph, semi-log & log graph, Trilinear chart, Circular graph, Climatograph, Taylor's climograph, Annual water deficiency and water surplus graph.

Survey Camp: Landscape study tour of cultural and physical features be conducted organizing a field excursion for a week and a detailed report of about 25 typed pages with appropriate maps and diagrams should be submitted by each student. The students must stay in the camp . Survey report shall be prepared separately and independently.

Books recommended:

1. Dickinson, G.C.: Statistical mapping of statistics, London
2. Khan, Z A: Text book of Practical Geography, Concept, New Delhi, 1998.
3. Lawrence,GRP: Cartographic Methods, London, 1971.
4. Monkhouse, FJ & Wilkinson HR: Map & Diagram, Methuen, London, 1994.
5. Robinson AH et,al. : Elements of Geography, John Willey, New York, 1995.
6. Sarkar, A K: Practical Geography: A Systematic Approach, Oriental Longman, Calcutta, 1997.
7. Saroj K. Pal: statistics for Geosciences- Techniques and applications, Concept, New Delhi, 1998.

grasslands and their distribution. Climate change and their effect on plant cover.

UNIT – V

Distribution of animals: the Zoo-geographical regions; Aquatic environment and life; marine and fresh water fauna; vegetation and floral regions of India, Economic importance.

Books recommended:

1. Barry, C: Biogeography- An Ecological and Evolutionary Approach, Cox Blackwell, Oxford, 1977.
2. Cain, S A : Foundation of Plant Geography, Harper & Row, New York, 1944.
3. Darlington, P J :Zoo- geography- The Geographical Distribution of Animals, John Willey, London, 1957.
4. G. Ponald: The Geography of Flowering Plants.
5. Huggett, R J : Fundamentals of Bio- geography, Routledge, USA, 1998.
6. Martin, C : Plant Geography, Methuen, 1975.
7. Mathur, H. S. : Essentials of Bio-geography, Anuj Printers, Jaipur, 1998.
8. Newbigin: Plant and Animal Geography.
9. Pears, N: Basic Biogeography, Longman, London, 1985.
10. Phillip, J : Zoogeography : The Geographical Distribution of Animals, John Willey, New York, 1957.
11. Robinson, H : Biogeography, McDonald & Evans, London, 1982.
12. S.I. Hora: Fundamental Conception of Zoo-Geography, NGSI, Banaras.
13. Schimpe: Plant Geography
14. Seddon, B : Biogeography, Duckworth, London, 1971.
15. Simmon, I G : Biogeography- Natural and cultural, Longman, London, 1974.
16. World Resources 2000- 01: People and Ecosystem, World Resources Institute, Washington, 2001.
17. Zoo- geographical Atlas.

PAPER VII (b.): AGRICULTURAL GEOGRAPHY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Elements of agricultural Geography: Concept of agricultural origin and dispersal, Development of agriculture through the ages in important agricultural areas of the world, trends and practices; Factors affecting agriculture: Physical- relief, climate, soil, water, storage etc. social land

8. Kaur, J :Himalayan Pilgrimage and New Tourism, Himalayan Books, New Delhi, 1985.
9. Lea, J : Tourism and Development in the Third World, Routledge, London,1988.
10. Milton, D : geography of World Tourism , Prentice Hall, New York, 1993.
11. Pearce, D G : Tourism Today: A Geographical Analysis, Harlow, Longman,1987.
12. Robinson, H. A : Geography of Tourism, McDonald & Evans, London, 1996.
13. Sharma, J K; tourism Planning and Development- A New Perspective, Kaniska, N. Delhi,2000.
14. Sinha, P C ; Tourism Impact Assessment, Anmol, New Delhi, 1998.
15. Theobald, W (ed.) : Global Tourism: The Next Decade, Oxford, Butterworth, Heinemann, Oxford, 1994.
16. Voas, R: Tourism- The Human Perspective, Hodder & Stoughton, London, 1995.
17. Williams A M & Shaw, G : Tourism and Economic Development – Western European Experiences, Belhaven, London.
18. Williams Stephen: Tourism Geography- Contemporary Human Geography, Routledge, London, 1998.

PAPER-VII: ANY ONE OF THE FOLLOWING:

PAPER VII (a): BIO- GEOGRAPHY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Meaning and Scope of Bio- Geography, History of Zoo- Geography and Plant Geography, Ecology and Habitat- the habitat factors and climatic factors; forms and functions of ecosystem.

UNIT – II

Conservation and management of ecosystem, Conservation of wildlife and forests, Soil erosion and conservation, Pollution and its effect on wildlife and vegetation.

UNIT – III

Plant response to environment; physical factors influencing world distribution of plants and animals; Barriers of distribution and means of dispersal of plants; Conditions of existence for animals; Barriers of distribution and means of dispersal of animals; Types of isolation, effects of geographic isolation.

UNIT – IV

Types of plant communities in general, factors controlling forest distribution; Characteristics of equatorial and temperate forests and

8. Singh R.L.: Elements of Practical Geography, Kalyani Pub. New Delhi
9. Steers, J.A. : Map Projections, University of Lonon Press,London.
10. Sharma J.P. : Prayogatamak Bhoogol, Rastogi, Meerut.

M.A./ M.Sc. FINAL GEOGRAPHY EXAMINATION- 2021

PAPER-V: ADVANCED GEOGRAPHY OF INDIA

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Physiography and drainage system; soils, vegetation; climate and its regional variations; origin and mechanism of Indian Monsoon; Schemes of natural, physiographic, and climatic classification; Identification of drought and flood prone areas.

UNIT-II

Resources: conservation and utilization of land, mineral, water, biotic and marine resources. Agriculture, agro-climatic regions, land use pattern, green revolution and its impact on Indian agriculture, Agriculture infrastructure – irrigation, fertilizers and seeds, Dry zone agriculture.

UNIT-III

Mineral and power resources; factors of industrial localization; classification of industries; Major industries: iron & steel, cotton & textile, cement, fertilizers, paper & pulp and sugar industry.

UNIT-IV

Tribal areas and their problems; population distribution, density and growth, population problems and policies; study of the network of roadways, railways, airways and waterways; Regional disparities in social and economic development inIndia.

UNIT-V

Geographical study of Rajasthan under the following heads: Relief, climate, vegetation, soils, agricultural development, irrigation, mineral and power resources, industrial development; Detailed study of – (i) Marusthali, (ii) Aravalli, (iii) Hadoti and (iv) Bangar region.

Books recommended:

1. Champion, H.G.: A Preliminary Survay of forest types of India and Burma, Indian Forest Record, New Series, Silviculture, Vol. I, Delhi, 1976.
2. Chattergy, S B: Climatology of India, Calcutta Univ. Calcutta.
3. Choudhary M R: Indian Industries – Development and Location.
4. Dreze, Jean & Amartya Sen (ed.): India: Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1996.

5. Galyna & Sengupta: Economic Regions and Regionalisation in India, 1968.
6. Government of India: Five Year Plans of India.
7. Govt. of India: National Atlas of India, NATMO Publication, Calcutta.
8. Govt. of India: The Gazetteer of India, Vol. I & III, Pub. Div. New Delhi, 1965.
9. India Year Book (Latest Edition) Publication Division, Delhi.
10. Irrigation Atlas of India
11. Khular, D R : Geography of India
12. Kumar LSS & others: Agriculture in India, Vol. I & II, Asia Publishing House, Bombay.
13. Kundu & Moonis Raza: Indian Economy- The Regional Dimension, Spectrum Pub. New Delhi, 1982.
14. Mishra, V C: Geography of Rajasthan, National Book trust, New Delhi, 1967.
15. Puri, G. S. : Indian Forest Ecology, Oxford Book stationary Co. 1960.
16. S.P. Rai Choudhary: Land and Soil, National Book Trust, New Delhi.
17. Sharma, T C and Coutino, O.: Economic and Commercial Geography of India, Vikas Publishing House, New Delhi, 1993.
18. Singh, R L: India- A Regional Geography, N.G.S.I. Varanasi, 1971.
19. Spate, OHK & Learmonth, A T A: India and Pakistan- Land, People and Economy, Mathuen & Co. London, 1967.
20. Tiwari, R.C.: Geography of India
21. C.B. Mamoria: Bharat ka Brahat Bhoogol, Sahitya Bhavan, Agra.
22. Gurjar & Jat: Bharat ka Bhoogol, Panchsheel, Jaipur.

PAPER-VI: ANY ONE OF THE FOLLOWING:

PAPER VI (a): URBAN GEOGRAPHY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Aims and scope of urban geography, Factors affecting the growth towns during Neolithic period, Greek and Roman period, Dark Age, Medieval period, Renaissance period, Industrial revolution and modern times; Chief characteristics of the towns of each period.

UNIT- II

Trends of urbanization in the world; urbanization in India since 1901 and its problems; Census of India; Definition of urban centres; Chief characteristics of modern towns; city conurbation , Metropolis and Megalopolis; Spatial patter and distribution of urban centres: types of cities, central places, transport foci and centre of specialized services.

PAPER VI (d): GEOGRAPHY OF TOURISM

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Basics of tourism: definition of tourism, factors influencing tourism: historical, natural, socio- cultural, and economic; motivating factors for pilgrimage: leisure, recreation, Elements of tourism, tourism as an industry.

UNIT – II

Geography of tourism: its spatial affinity, areal and locational dimensions comprising physical, cultural, historical and economic; Tourism types: cultural, eco- ethno- coastal and adventure tourism, national and international tourism, globalization and tourism.

UNIT – III

Indian tourism: Regional dimension of tourism attraction; evolution of tourism, promotion of tourism, Development of tourism in Rajasthan and its problems and prospects.

UNIT – IV

Infrastructure and support system- accommodation and supplementary accommodation, other facilities and amenities, tourism circuits – short and longer detraction- agencies and intermediacies- Indian hotel industry.

UNIT – V

Impacts of tourism: Physical, economic and social and perceptional positive and negative impacts; Environmental laws and tourism- current trends, spatial pattern, and recent changes; Role of foreign capital and impact of globalization on tourism.

Books recommended:

1. Abbasi A.A: Geographical basis of tourism, Pangaea Publication, Indore, 1977.
2. Bhatia, A K ; Tourism Development: Principles and Practices, Sterling Publishers, New Delhi, 1996.
3. Bhatia, A K : International Tourism- Fundamentals and Practices, Sterling, New Delhi, 1991.
4. Chandra, R H : Hill Tourism: Planning and Development, Kaniska, New Delhi, 1998.
5. Hunter, C and Green,H : Tourism and Environment: A sustainable Relationship, Rutledge, London, 1995.
6. Inskeer, E : Tourism Planning: An Integrated and Sustainable development Approach, Van Nostrand & Reinhold, New York, 1991.
7. Kaul, R K: dynamics of Tourism and Recreation, Inter- India, New Delhi, 1985.

UNIT-I

Introduction: Nature and scope of cultural geography; definition, cultural elements and components of culture, convergence and divergence processes, Cultural change; perception, behavourlism and cultural relativism, environment and culture.

UNIT – II

Cultural diversity: Basis of cultural diversity- race, religion and language, Cultural diversity in world, cultural diversity and regionalization in India, culture areas and cultural regions of the world, Geography of ethnic groups and tribal groups.

UNIT – III

Religion and its diffusion, diffusion of ethnic traits in world as well as India; ethnic landscape and economy of the area; cultural landscape; religions: origin, diffusion and spatial distribution; religion and economic development.

UNIT – IV

Pattern of livelihood: various economic activities and cultural adaptation; agriculture, industrialization and modernization; technological changes and their geographic implications.

UNIT- V

Dwelling places as cultural expressions, Habitat, economy, and society of tribal groups- Eskimos, Pygmy, Nagas, Bhils, Santhal, Gond and Garasia.

Books recommended:

1. Broek J C & Webb J W : A Geography of Mankind, McGraw Hill, New York, 1978.
2. Crang, Mike: Cultural Geography, Routledge, London, 1998.
3. Harmandorf: Tribes of India: The Struggle of Survival, Oxford University Press, N. Delhi, 1989.
4. Hazra (ed.): Dimensions in Human Geography, Rawat, Jaipur, 1997.
5. Huchinson & Smith : Ethnicity, Oxford University Press, Oxford, 1996.
6. Jorden & Lester G : The Human Mosaic, Harper & Row, New York, 1979.
7. Massey D & Jess P : A Place in the World : Places, Cultures & Globalization, Oxford University, New York, 1995.
8. Massey, et.al. (ed.): Human Geography Today, Polity Press, Cambridge, 1999.
9. Mukherjee, A B and Aijazuddin, A : India- Culture, Society and Economy, Inter- India Publication, New Delhi,1985.
10. Stev & Michel: (ed.): Places and the Politics of Identity, Rutledge, London, 1993.
11. Schwartzberg, J. E. : Historical Atlas of South Asia, University of Chicago, 1978.
12. Singh, A K : Approaches to tribal Development, Sawrup & Sona, New Delhi, 1994.
13. Sopher, D E : Exploration of India: Geographical Perspective on Society and Culture, Longman, London, 1980.
14. Rizvi Munir: Sanskritik Bhoogol.

UNIT- III

Classification of cities based on functions; urban rank size relationship, Primate city, The basic and non-basic concept of urban economic functions and its application; Urban hierarchy based on functions; Christaller's central place theory, August Losch's theory of market centres.

UNIT – IV

Urban morphology; Unplanned and planned growth of town: Urban plans, Morphology of Indian cities; Functional structure of towns, Chief characteristics of CBD, residential areas, Manufacturing areas and other functional areas; Theories of models of urban structure.

Unit-V

Centrifugal and centripetal forces in urban geography, Development of suburbs, Rural- urban fringe, satellite town, Ring towns, Sphere of urban influence (Umland), and its delimitation. Principles of town planning- Preparation of Master Plan, Study of Master Plans of Jaipur, Bikaner, Sriganganagar and Churе; principles of regional planning.

Books recommended:

1. Alam, S M: Hyderabad and Secundrabad- twin City, Asia publishing House, Bombay,1964.
2. Carter: The Study of Urban Geography, Edward Amold, London, 1972.
3. Chorley & Haggett (ed.) : Models in Geography, Methuen, London, 1966.
4. Dickinson, R E : City Region and Regionalism, Rutledge & Kegon Paul, London, 1964.
5. Gibbs, J P : Urban Research Methods, Van Nostrand Co. Princeton, New Jersey, 1961.
6. Govt. of Rajasthan: Master Plan of Jaipur, Bikaner, Sriganganagar and Churu
7. James & Jones: (ed.) : American Geography- Inventory and Prospect, Syracuse University Press, Syracuse, 1954
8. Johnson, R H : Urban Geography.
9. Mandal, R. B. : Urban Geography- A Textbook, Concept, New Delhi, 2000.
10. Meyer & Kohn: Readings in Urban Geography, University of Chicago Press,1955.
11. Mumford, L. : Culture of Cities, McMillan & Co. London, 1958.
12. N.V. Sovani: Urbanization and Urban India, Asia Publishing House, Bombay.
13. Northan, R C : Urban Geography, John Willey & Sons, New York 1976.
14. Singh, R L : Bangalore- An Urban Survey, National Geographic Society of India, BHU, Varanasi.
15. Singh, K & Steinberg, F. (ed.) : Urban India in Crisis, New Age Interns, New Delhi, 1998.
16. Singh, R L : Banaras- A Study in Urban Geography, Students Friends, Allahbad.
17. Smails, A E : The Geography of Towns, Huchinson, London, 1953.

18. Taylor, G.: Urban Geography, Mathuen & Co. London.
19. Tewari V. K. Jay A. Weinstein, V.L.S. Prakasa Rao: Indian Cities: Ecological Perspective.
20. Bansal: Nagariya Bhoogol, Meenakshi Prakashan, Meerut.
21. Rao, B P : Nagariya Bhoogol, Vasundhara, Gorakhpur, 2004.

PAPER VI (b): REGIONAL PLANNING AND DEVELOPMENT

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.

UNIT-I

Regional concept in Geography and its application to planning, Conceptual and theoretical framework, Merits and limitations for application to regional planning and concept of development, Indication of development, Regional imbalances, Changing concept of the region from an inter- disciplinary view point, Concept of planning regions, Concept of Space, Area and locational attributes.

UNIT – II

Types of regions: formal and functional; uniform & nodal; single purpose & composite region in the context of planning; Regional hierarchy; Special purpose regions and methods of regional delineation; approaches to delineation of different type of regions and their utility in planning; Planning processes- sectoral, temporal and spatial dimensions, short term and long term perspectives of planning, Planning for a region's development and multi- regional planning in a national context.

UNIT – III

Physical regions, resource regions, Regional divisions according to variations in level of socio- economic development; Special purpose regions- river valley region, metropolitan region, problem region, hilly region, tribal region, regions of drought and floods.

UNIT - IV

Indicators of development and their data sources, measuring levels of regional development and disparities – a case study of India; Regional development strategies – concentration v/s dispersion; Case studies for plans of development and developing countries, regional plans of India.

UNIT – V

Concept of multi- level planning; decentralized planning; peoples participation in planning process; Panchayati Raj System; role and relationship of panchayati raj institutions (Village, Block and District); Regional development in India- Problems and Prospects.

Books recommended:

1. Abler, R. et. Al. : spatial Organization : The Geographers view of the world, Prentice Hall, Englewood Cliffs, N.J., 1971.

2. Bhat, L.S. : Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
3. Bhat, L.S. et.al. : Micro-level Planning: A case Study of Karnal Area, K.B. Publications, New Delhi, 1976.
4. Chorley & Hagget : Models in Geography, Methuen, London, 1967.
5. Christaller, W. : Central Places in Southern Germany, Translated by C.W. Baskin, prentice Hall, Englewood Cliffs, New Jersey, 1966.
6. Friedman & Alonso : Regional Development and Planning- A Reader, M.I.T. Press, Cambridge, Mass, 1967.
7. Gosal, G S & Krishan G. : Regional Disparities in Levels of socio-economic development of Punjab, Vishal Publication, Kurukshetra, 1984.
8. Govt. of India, Planning Commission : Third Five Year Plan, Chapter on Regional Imbalances in Development, New Delhi, 1961.
9. Indian Council of Social Science Research : Survey of Research in Geography, Popular Prakashan, Bombay, 1972.
10. Johnson, E A J : The Organisation of Space in Developing Countries, Harvard University Press, Cambridge, 1970.
11. Kundu & Moonis Raza: Indian Economy – The Regional Dimension, Spectrum Pub. N. Delhi, 1982.
12. Losch, A. : The Economics of Location, University Press, Yale, New Harve, 1954.
13 Mahesh Chand Puri V.K : Regional Planning in India , Allied Publishers Ltd New Delhi, 1995.
14. Mishra R P et. Al. : Multi-level Planning, Heritage Publisher, Delhi, 1980.
15. Mitra A : levels of Regional Development, Census of India, Vol. I , Part IA(I) and (II), New Delhi, 1965.
16. Nangia Sudesh: Delhi Metropolitan Region, Rajesh Publication, Delhi, 1976.
17. Raza Moonis (ed) : Regional Development, Heritage Publishers, Delhi, 1988.
18. Richardson, H.W. : Regional Economics, Weidenfeld and Nicolson, London, 1969.
19. Sundaram, K.V. (ed.) Geography and Planning- Essays in Honour of VLS Prakasa Rao, Concept, New Delhi, 1985.
20. Tarlok Singh: India's Development Experience, McMillan, New Delhi, 1974.

PAPER VI (c): CULTURAL GEOGRAPHY

Time : 3 hours duration **Max. Marks : 100**

Note : The question paper shall contain three sections. Section A shall contain 10 questions two from each unit of 2 marks each. The candidate is required to answer all the questions. The answers should not exceed 50 words. Section B shall contain 10 questions two from each unit. The candidate is required to answer five questions one each from each unit. Each question shall be of 7 marks. The answers should not exceed 200 words. Section C shall contain 5 questions one from each unit of 15 marks each. The candidate is required to answer any three questions. The answer shall not exceed 500 words.